

## **Multimedia Lectures**

We suggest that all multimedia lectures be preceded by “The Sky Tonight “A” ”.

### **Fathers of Astronomy:** (45 minutes)

For millenniums, humans believed the Earth to be flat, stationary and the center of the universe. Five hundred years ago, Copernicus' visionary hypothesis placed the Sun at the center of the solar system. Tycho Brahe's observations paved the way for Kepler and his three planetary laws. Galileo was the first to use a telescope to observe the heavens. Newton later gave us the physical explanation why the sun was the center of the solar system. Come and find out the challenges and the contributions these men made to astronomy.

### **Eyes on the Universe:** (45 minutes)

Galileo first used a telescope to explore the universe. Ever since then we have been building larger and larger telescopes. Find out how these instruments work and how they have evolved since Galileo's time. Light is only part of the universe. Find out how we can observe the invisible part of the universe with a new breed of telescope.

### **The Nature of light:** (45 minutes)

How hot is a star? What is a star made of? Do stars move? The answers are hidden in the light emitted by the star. By understanding how light is produced we can begin to decipher the message it is trying to tell us.

### **Our star: The sun** (45 minutes)

For the first nine billion years in the history of the universe there was no sun. After exploring its formation we will take a close look at the structure of the sun and its power source. Find out how we can study the inside of the sun despite its ten million-degree temperature. Its surface features, granules, spicules, sun spots, flares, coronal mass ejection are spectacular to view but reveal the complexity of these tiny points of light.

### **Stellar Evolution:** (60 minutes)

Stars have a humble beginning inside a cool, dusty nebula in a lonely region of space. After a long life as a stable star death waits to claim its due. As if cheating the grim reaper, the stellar corpses are among the most fascinating objects in the universe. White dwarves, neutron stars, pulsars and black holes are part of the mysterious and strange afterlife of stars.

### **Search for exoplanets:** (30 minutes)

Our sun is halfway through its life. It will die and we will have to move. Where will we go? The search has begun. How can we find a planet we can't see lost in the glare of a star? New techniques have proven useful and we have already found more than three hundred planets. Come and find out how we find the extra solar planets and where we stand in our search for a new home.

### **Our cosmic cousins:** (45 minutes)

As we find more planets around other stars we can help but wonder if they are inhabited. By a process of elimination we will zero in on planets that can support life, as we know it. Even if life exists, is it intelligent? Have they mastered space travel? Are UFO's really spaceships, visiting us, from these worlds? What are the probabilities that these aliens have ever visited Earth? We will guide you but you will have to form your own opinion.

### **Black Holes:** (60 minutes)

Nothing stirs up the imagination more than the mysterious black hole. Is it really a hole? Does it lead to another universe or to some far off corner of our galaxy? Does it travel through space like a cosmic vacuum cleaner? Its description is simple but its nature challenges our imagination. Gravity is no longer a force but an effect created by the warping of the space-time continuum.

### **Scale of the Universe:** (60 minutes)

We live on a small planet orbiting an average star in a typical galaxy within an all-encompassing universe. How big are these objects? How far apart are they from each other? When we look at their composition we enter the world of microcosm, molecules, atoms, protons, neutrons and sub atomic particles. From infinitely small to the infinitely big is the best way to describe the building blocks of the universe.

### **Weird Universe:** (45 minutes)

Astronomy is weirder than science fiction. Gravity is not a force but a manifestation produced by the warping of the space-time continuum. A black hole is not a hole but an infinite gravity well. Dark matter is not black; it cannot be seen and can, so far, only be detected by its gravitational effects. Looking into the depths of space is the same as looking at the past of the universe. Travelling at near the speed of light results in changes in mass dimensions and slows time of the space traveller. Weird you bet.

**Mars Next Stop** (30 minutes)

Join us on a proposed visit to Mars. How do we plan for such a trip? How will we get there? Where are we going to stay? What will we do on Mars? How will we get back?

**Canada in Space** (30 minutes)

Unknown to most, Canada launched its first rocket in 1940 from Fort Churchill in Manitoba. Canada has a reputation for designing and building sophisticated satellites, not just for themselves but other countries. The Canadian Space Agency is a testimonial to our contribution in space explorations.

**Astronomers Guardians of Time:** (60 minutes)

Time was for a long time measured by the motion of the sun, moon and the stars. Modern time pieces are based on these motions. From the simple gnomon and obelisk to mechanical clocks, digital watches and atomic clocks, time keeping has been the job of the astronomers.